CHAPTER 2 – ALTERNATIVES AND ISSUES

2.1 Introduction

This chapter contains documentation of the relevant issues that were identified during the scoping process; a description of alternatives considered; and, a summary of environmental effects associated with each alternative. It also contains a description of public involvement, a description of issues and alternatives not given detailed study, as well as mitigation measures and monitoring requirements.

Relevant issues were used to design the alternatives to the proposed action. Each alternative reflects a different level of response to the issues. One alternative may do a better job of addressing and resolving certain issues than another alternative. Therefore, the issues are used to evaluate the overall environmental effects of each alternative.

2.2 Public Involvement

The proposed action was presented to 35 potentially interested parties in the form of a scoping letter (December 4, 2009). The project was also listed in the quarterly schedule of proposed action for the Gallatin National Forest. In addition, the scoping letter was posted on the Gallatin National Forest web page. A total of eight different individuals commented. The comments were reviewed to identify issues/concerns and alternatives (project file, doc. #B -14).

Two individuals expressed interest in extending the scoping period so there could be a field trip to the project area during the summer. The Hebgen District hosted a trip on July 27, 2010. Members from five different environmental groups attended (Buffalo Field Campaign, Alliance for the Wild Rockies, Natural Resource Defense Council, Western Watershed, and Buffalo Allies of Bozeman). Their main issue pertained to the management of bison, and that if the cattle are on the allotment then the Department of Livestock may continue to haze bison.

The environmental analysis will be mailed to all interested individuals and a legal notice placed in the Bozeman Chronicle. A thirty day comment period (starting when the legal notice is published) allows for additional public involvement in the analysis. All comments received will be reviewed for content and a response to comments will be included with the final Decision Notice.

2.3 Issue Identification

The purpose of scoping is not only to inform the public, and to identify issues and concerns regarding a proposal, but also to determine which issues to analyze in depth and to use in the development of alternatives to the proposed action. A list of issues was developed using comments from the public, other agencies and resource specialists. The issues were separated in two groups: those analyzed in detail, and those that were dismissed from detailed analysis because the effects from the project were either outside the scope of the project, already decided by the Forest Plan or higher level decision, irrelevant to the decision to be made, or would have minor effects.

2.3.1 Issues Not Analyzed in Detail

All issues or concerns identified from scoping but were not evaluated in detail in Chapter 3 are discussed in Appendix A. These issues include the following:

Impacts to Private Property/Aesthetics/Safety
Impacts to Cultural Resources/Archeological Sites
Impacts to Greenhouse Gasses / Global Warming
Impacts to Other Wildlife Species (habitat fragmentation, migration corridors, moose, big horn sheep, antelope, mule deer)
Impacts to Migratory Birds / Brown-headed Cow Bird
Impacts to Sensitive Plants
Suitability and Capacity Analysis
Water Quality

Bison Management Issue

Comments from the public addressed concerns that the presence of cows on the allotments would limit options for bison management policies set forth in the Interagency Bison Management Plan (IBMP). As a result, a number of alternatives were suggested to help resolve this issue. One alternative suggested by the public was to close the allotments, which is addressed in this environmental analysis under the Alternative 1- No Grazing Alternative. Other suggestions included: change livestock to horses or steers (not cow calf pairs); or turn cattle out on the allotment later in the season when the transmission of *Brucella abortus* is not likely (for example, after July 15). In response to these suggestions Alternative 4 - Modified Proposed Action was developed and analyzed in detail.

Some believe that if the cows are not in the Hebgen Basin then the IBMP would allow for free roaming bison in this area. The current IBMP would not allow for free roaming bison after May 15 in zone 3 (west side of South Fork Madison River), regardless of the presence or absence of cows on the Forest lands. However, the IBMP allows for the management plan to be modified based on science and management directions set by Animal Plant Health Inspection Service (APHIS) and by State Department of Livestock. APHIS recently published new management guidelines for managing the spread of *Brucella abortus* in the Federal Register (December 2010)(project file, doc. #M-2 & 3). Additional guidelines will be developed for managing livestock in areas with *Brucella abortus.* Given the recent changes in how *Brucella abortus* is being managed it is impossible to know what future bison management direction will involve. Alternative 4 would allow for flexibility in allotment management to accommodate changes in bison management.

In response to the public comments regarding the bison management issue, Alternative 4 was developed and the effects of livestock grazing on bison (forage availability, fence barriers, and disturbance) were analyzed in detail.

2.3.1 Issues Analyzed in Detail

Issues that were directly or indirectly caused by implementing the proposed action were analyzed in detail to determine if they would have a significant effect on the human environment. For each issue, indicators were selected to evaluate issue resolution, measure attainment of objectives and describe environmental impacts. Indicators are quantified if possible; otherwise, a narrative discussion is included. All of the issues and measurement indicator of effect listed below are discussed in more detail in Chapter 3 and in the specialist's report in the project file.

Grazing effects on aquatic stream form and function, and on riparian dependent species: There is a concern that the proposed action may prevent the attainment of a healthy riparian-wetland ecosystem including stream channel stability and riparian dependent species within the allotments.

Measurement indicator of effect: Two different indicators were used to evaluate this concern, Proper Functioning Condition (PFC) assessment and Stream Channel Stability Rating (SCS).

Proper Functioning Condition assessment is used to determine the health of a riparian-wetland ecosystem (BLM, 1998). The capability and potential of the riparian-wetland ecosystem is defined by the interaction of three components: vegetation, landform/soils and hydrology. This assessment uses the following categories:

1.) Proper Functioning Condition – Riparian areas are functioning properly when adequate vegetation, landform or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality, filtering sediment, aiding in floodplain development, improving flood water retention and ground water recharge, developing root masses that stabilize streambanks, and developing diverse channel characteristics that provide habitat for riparian species.
2.) Functioning at Risk – These are riparian areas that are functional but an existing soil, water or vegetation attribute makes them susceptible to degradation.
3.) Non-functional – Riparian areas that clearly are not providing adequate vegetation, landform or large woody debris to dissipate stream energy associated with high flows and are not reducing erosion or improving water quality.
4.) Unknown – used when sufficient information is lacking to make a determination.

Stream Channel Stability (SCS) procedure evaluates both the inherent and current physical function, and the stability of stream channels (Pfankuch, 1975). The procedure focuses on the physical function of stream channel stability, not the quality of fish habitat. Generally the most stable channels are steep and coarse textured riffles or cascades which do not provide much fish habitat. Conversely, streams with numerous undercut banks, which provide good fish habitat, are rated lower in the channel stability rating procedure. This rating procedure is used in long term monitoring to measure stream channel characteristics over time. Permanent plots were installed in 2009 (base line data) and is intended to be re-measured every 5 years. The data is then compared to track changes over time. Also, the current SCS data is compared to the expected reference condition for

similar stream types (Pfankuch, 1975) to determine the level of departure. The Gallatin Forest Plan monitoring direction requires less than a 20 point departure. (Forest Plan, p. IV-5).

Grazing effects on vegetation condition: There is concern that the proposed action could have adverse effects on range condition including riparian and upland vegetation, and the potential establishment or spread of invasive weeds.

Measurement indicator of effect on vegetation: Each of the dominant vegetation types within the primary grazing areas were ranked according to the severity of departure from the desired condition for 17 rangeland health indicators (rills, water flow pattern, pedestals, bare ground, gullies, wind erosion, litter movement, soil surface, soil loss, water infiltration, soil compaction, plant functional groups, plant decadence, litter amount, annual production, invasive plants and plant vigor)(Pyke, et al. 2002). An overall rating for each dominant vegetation type was assigned based on the significance of the indicator and the severity of the departure from reference condition. A work sheet for each vegetation type was completed and is in the project file (project file, doc. #E-7).

Measurement indicator of effect on invasive weeds: The likelihood that livestock would cause a large increase in weeds was determined based on: the type of weeds present, the probable vector for spreading the weeds, and whether the current level of weed control would be able to control the weeds. Each allotment was given one of the following ratings:

1.) High – The weed species present in the allotment are spread cattle, at a very high rates, and the current weed control level would not be able contain the weed density. Grazing is causing disturbed sites that are becoming colonized by weeds.
2.) Moderate – The weed species present are spread by cattle, along with other vectors, but the current weed control with herbicides would keep weeds at low density. Grazing is not causing disturbed sites that are becoming colonized by weeds.
3.) Low - Cattle are not the main vector of the weed species present in the allotment (probably being spread by vehicles, or wind). Current weed control with herbicides would keep weeds at low density.

Grazing effects on soils: Concern arose that livestock grazing may have adverse effects on soil condition, productivity, and stability. Also of concern is whether livestock grazing contributes to levels of detrimental soil disturbance that may be created due to compaction, trampling, and/or increased soil erosion.

Measurement of effects on soils: Measurement of detrimental soil disturbance (including compaction, displacement, rutting, severe burning, surface erosion, loss of soil organic matter, and soil mass movement) has been used in Region 1 of the Forest Service as a surrogate measure to ensure that land productivity and soil quality are not impaired. The Region wide standard (USDA 1999) requires that new activities are to be designed so they "do not create detrimental soil conditions on more than 15 percent of an activity area".

Grazing effects on threatened and endangered wildlife species: Concerns were submitted that the proposed action may have adverse effects on Canada lynx, and grizzly bear.

Measurement indicator of effect: The indicator of impacts to Canada lynx is the acres of suitable and/or occupied snowshoe hare habitat that are altered and/or impacted to a condition unsuitable for snowshoe hares from grazing or infrastructure development. The indicator of impacts to grizzly bear would be those actions that increase road density, disrupt foraging behavior of the bears or distribution of elk, and actions that increase habituation.

Grazing effects on sensitive terrestrial wildlife species: Concerns were submitted that the proposed action may have adverse effects on sensitive species (black-backed woodpecker; bald eagle; trumpeter swan; harlequin duck; peregrine falcon; flammulated owl; Townsend's big eared bat; long eared myotis; long legged myotis; North American wolverine; gray wolf and bighorn sheep). Only bald eagle, trumpeter swans and gray wolf have suitable habitat within the allotments.

Measurement indicator of effect: Project impacts to bald eagles would be identified by disturbance of adults, or disruption of foraging or nesting behaviors. One-quarter and one-half mile buffers have been identified for each of the nesting territories found on the Hebgen Lake District. An indicator of impacts of this project on trumpeter swans would be disruption of daily foraging, courtship or breeding activities caused by humans or cattle, or a loss of breeding habitat. Potential effects to gray wolves from this project would be indicated by displacement or disturbance to wolves using the project area, disruption of denning or rendezvous points, a major decline or change in distribution of prey species, or livestock depredation.

Grazing effects on management indicator species: Concerns were submitted that the proposed action may have adverse effects on management indicator species (bald eagle, grizzly bear, pine marten, Rocky Mountain elk, and northern goshawk). The bald eagle and grizzly bear are addressed in previous sections.

Measurement indicator of effect: Indicators of impacts to pine martens would be alterations to habitat composition or structure resulting in a loss of denning or foraging habitat. For elk, the indicator is the amount of forage remaining after cattle grazing and changes to elk hiding cover resulting from the allotment management practices. Indicators of impacts to goshawks would be reduction in available nesting, post fledging, and foraging habitat.

Grazing effects on bison: The issue is whether or not bison habitat would be impacted (i.e., physical barriers, loss of forage, or displaced by human presence) by the reissuance of the Watkins and South Fork grazing permits.

Measurement indicator of effect: An indicator of biological impacts to bison would be the prevention of bison movement and dispersion across the landscape because of fences, or the loss of forage because of livestock grazing. The impact would be measured by the presence of fences, the disturbance from humans while administering the terms of the permit such as maintaining the fences, and the presence of forage availability.

Economics: This issue addresses the economic and financial feasibility of the project and consists of two separate issues. First, what are the Forest Service costs and benefits in terms of present net value, for the next 10 years (all expenditures expressed in 2011 dollars) of each alternative? This information shows what each alternative would cost and what are the costs of mitigation measures and monitoring. Second, what are the rancher's costs and benefits in terms of present net value, for the next 10 years (all expenditures expressed in 2011 dollars) of each alternative? Comments received from the public, indicated a desire to know how much of the expenses would be paid for by the government and how much by the rancher.

Measurement indicator of effect: For the first issue, the present net value was calculated using only monetary values for the Forest Service to measure which alternative is least costly or most efficient. For the second issue, costs directly related to managing the allotment for the permit holder were analyzed in terms of present net value.

2.4 Description of Alternatives Considered in Detail

2.4.1 Alternative 1 - No Livestock Grazing

Under this alternative, domestic livestock use of the South Fork and Watkins Creek Allotments would be discontinued. All existing structures (fences, corral, and cattle-guards) would be removed. Invasive weed control, with herbicide applications, would continue on the allotments annually.

2.4.2 Alternative 2 – Current Management (also considered the No Action Alternative)

Under this alternative, livestock grazing would continue as it has been for the last 20 years. Allowable use is the amount of current forage production by weight that could be removed in order to maintain or improve rangeland conditions. The allowable use level on upland is 55%. This level is based on information gained through field observations and research findings for mountain and foothill cool season settings (Valentine, 2001. p. 390). The allowable use levels for riparian areas as outlined in the Gallatin Forest Plan include the following for deferred rotation systems: for grass / forb meadows 50 % utilization in early season pastures and 35 % utilization in late season pastures; for willow/grass/forest 50% utilization in early season pastures and 40 % utilization in late season pastures, and 50 % leader use on browse material (Forest Plan, 1987, p. III-20). Livestock are moved to new pasture or leave the allotment when utilization levels are met. Fences would be maintained in current locations. Fence maintenance costs are shared between the permit holder and Forest Service. Monitoring and treatment of invasive weeds would continue on both allotments.

South Fork Allotment - South Fork Allotment (143 acres), consists of a three pasture deferred rotation system, with 60 Animal Unit Months (AUMs). Between 1982 and the present, there has been an average of 15 cow/calf pairs (but varied between 12 and 19), from July 1 to September 30 (92 days). A map of this area is provided at the being of this document. The table below shows the rotation schedule, desired utilization rates, and timing of grazing. The specific dates are flexible based on seasonal fluctuations in precipitation and availability of forage.

Table 2.4.2.A - Example of a Three Pasture Rotation System, Desired Utilization Rates, Estimated Dates. Usually you'll want the pattern to be year 1 early, year 2 late, and year 3 mid treatment – by going year 1 early to year 2 late, you are essentially giving the area one recovery period to seed set and another period of rest until seed set.

	Years 2011, 2014	**Years 2012, 2015**	**Years 2013, 2016**
North Pasture	Late(8/29-9/30) Uplands 55% Riparian 35%	Early(7/10-7/28) Uplands 55% Riparian 50%	Mid(7/29-8/28) Uplands 55% Riparian 50%
Middle Pasture	Mid(7/29-8/28) Uplands 55% Riparian 50%	Late(8/29-9/30)	Early(7/10-7/28) Uplands 55% Riparian 50%
South Pasture	Early(7/10-7/28) Uplands 55% Riparian 50%	Mid(8/29-9/30) Uplands 55% Riparian 50%	Late (7/29-8/28) Uplands 55% Riparian 35%

Watkins Creek Allotment – The Watkins Creek Allotment (approximately 3620 acres, with 493 acres within the allotment classified as primary range) consists of 2 pasture deferred rotation grazing system. There is an average of 55 cow/calf pairs that graze from July 1 to September 30(220 AUMs). A map of this area is provided at the being of this document. The table below shows the rotation schedule, desired utilization rates, and timing of grazing. The specific dates are flexible (move forward or backward in time) based on seasonal fluctuations in precipitation and availability of forage.

Table 2.4.2.B - Example of Two Pasture Deferred Rotation System, Desired Utilization Rates, Estimated Dates.

	Years 2011, 2014, 2015	**Years 2012, 2013**
Watkins Pasture	Late (8/3-9/30) Uplands 55% Riparian 35%	Early (7/1-8/2) Uplands 55% Riparian 50%
Upper Watkins Pasture	Early (7/1-8/2) Uplands 55% Riparian 50%	Late (8/3-9/30) Uplands 55% Riparian 35%

2.4.3 Alternative 3 - Proposed Action

This alternative would allow for livestock grazing to continue as outlined under Alternative 2, but with minor changes to the infrastructure (change fence locations, install water gap, cattle guard and water tank, harden stream crossing approach, use down trees to limit impacts to riparian areas) and increase the level of monitoring in riparian areas (measure trampling, stream characteristics and vegetation composition along Denny Creek Ditch, and monitor a long term permanent plots on Basin Cabin Spring

Creek and Denny Creek Ditch). A map showing proposed fence location is at the beginning of this environmental analysis.

South Fork Allotment –

Alternative 3 would have the same type and kind of livestock, same stocking density and same pasture rotation system as described above, under Alternative 2. Actions unique to Alternative 3 include the following:

1.) Monitor Basin Cabin Spring Creek and Denny Creek Ditch every 5 years (re- measure permanent plots) to determine conditions. If conditions are deteriorating it may be necessary reduce the timing, duration, and/or intensity of grazing.

2.) Monitor streambank trampling on Denny Creek Ditch along the lower 50 meter reach that is impacted by grazing (use 30% annual bank alteration based on Beaverhead Riparian Guideline (Bengeyfield and Svoboda, 1998) (project file, doc # H-8), or adopt another accepted methodology). Once bank alteration level has been reached, the cattle need to be removed or the stream bank protected (fenced). The timing, duration or intensity of grazing would be adjusted to reduce the impact on the stream bank.

3.) Install a water gap in the South Pasture so livestock have limited access to the South Fork Madison River. Currently cattle are fenced off from the South Fork River and completely dependent on water outflow from Denny Creek Ditch. The additional water source would reduce some of the impacts to Denny Creek Ditch that flows through the pasture.

Watkins Creek Allotment -

Alternative 3 would have the same type and kind of livestock, same stocking density and same pasture rotation system as described above, under Alternative 2. The only differences with Alternative 3 on the Watkins Creek Allotment are the following:

1.) Install a water tank (siphoned from Watkins Creek) to increase grazing along the western edge of Watkins Pasture. The tank would sit on a flat bench, 50 feet from the stream, on rocky soil. The water would drain back into the stream by flowing down an existing dried-up rocky channel. When the tank is not being used, it would be drained and left empty. Build a short extension to the existing fence (approximately 500 feet) to allow cattle access to the water tank on the flat bench, but still keep cattle out of the stream.

2.) Install a new cattle guard on the Hebgen Lake or Denny Creek Road #167 and move the northwest fence further to the north (install 2200 feet of new fence) to eliminate the problem of people failing to close the gate at the trailhead. The existing gate at the trailhead and the adjacent 1800 feet of fence would be removed. The new fence location would exclude an adjacent aspen stand so cattle grazing would not impact the aspen. The proposal in the scoping letter showed the fence line further to the north and increasing the size of the pasture (27 acres). This proposal has been

modified so that the fence line would run more east/west and increase the size of the pasture by only 15 acres.

3.) Harden a water crossing on Watkins Creek (only the western edge of shoreline with gravel, the eastern slope is already stable) and build a fence barrier to direct cattle through the water crossing. The hardened cattle crossing would impact 15 feet along the shore line and 30 feet towards the more stable soil on the west side of the stream (total area approximately 450 square feet). The hardened water crossing would allow cattle to access the water while protecting the rest of the small meadow (100 feet long and 60 feet across, or roughly 6000 square feet). The rest of the Watkins Creek is not accessible to cattle because the adjacent slopes are too steep or overgrown with vegetation and woody material.
4.) Monitor Wally McClure Creek every 5 years for excessive trail crossing, if necessary create a small barrier (drop a few trees or build a short drift fence) to re-route trails further away from the stream.
5.) Relocate fence next to Spring Creek campground about 100-200 feet to the north, where the shoreline is deeper, so livestock cannot walk around the fence at low water levels.
6.) All fence maintenance costs (materials and labor) would be paid for by the permit holder.

2.4.4 Alternative 4 – Modified Proposed Action

The intent of this alternative is to allow for livestock grazing (same actions as outlined in Alternative 3), provided that bison management options are not limited by the presence of livestock grazing. In the event that free ranging bison occur in Hebgen Basin, the management of livestock on these allotments would be modified to be consistent with management recommendations for brucellosis disease as stated by the government agencies in charge (such as Animal Plant Health Inspection Service, Montana Department of Livestock, Interagency Bison Management Plan, or Montana Fish Wildlife and Parks). For example, to be compatible with different bison management actions these allotments may implement the following possible options:

1.) Allow a change in the type of livestock to horses and/or steers; or
2.) Delay turn-on date of cattle to be consistent with scientific recommendation for avoiding risk of exposure to brucellosis; or
3.) The permit holder may be required to take non-use for resource protection on either one or both allotments for the purpose of minimizing conflicts with bison. A refund or credit would be used if grazing fees have already been paid. Non-use for resource protection might occur if bison are present and cohabitation is not acceptable to the agencies managing the disease, or if the forage is not available due to bison grazing (based on utilization levels outlined above). If only one allotment is not utilized, then some or all of the livestock may be moved to the other allotment (within AUM capacity) until conditions change.
4.) All fence maintenance costs would be paid for by the permit holder.

The same resource protection mitigation measures as identified in Alternative 3 would be included in this alternative. For example, when the forage utilization levels are achieved, regardless of what species grazed the forage, the cattle would be removed. Likewise, if stream banks deteriorate beyond

acceptable levels (as determined by the hydrologist and fish biologist) regardless of what species caused the trampling, domestic livestock grazing would only occur after the riparian area can be protected or restored (i.e., additional fence may be required). A map of this alternative is at the beginning of this document.

2.5 Alternatives Considered but not Given Detailed Study

Throughout the analysis process, a wide variety of alternatives were presented and explored to address certain issues. The decision on whether an alternative would be evaluated in detail was based upon how well it responded to the issues; its compliance with Gallatin Forest Plan goals, objectives, standards, and guidelines; the alternative's practicality based on past experience; and how well it appeared to meet the project's purpose and need. The following are alternatives suggested by the public and rationale as to why they were not considered in detail:

Allow free roaming bison to use these allotments. Alternative 4 allows for modification of the livestock grazing practices to accommodate management direction for bison and brucellosis. At the current time, bison are managed by Montana Department of Livestock and by the Interagency Bison Management Plan (USDA, IMBP, 2000). Changes to the Interagency Management Plan are beyond the scope of this analysis and the Forest Service alone does not have the authority to revisit this decision. The Secretaries of Interior and Agriculture, along with the governor of Montana, made the decision on the areas in which bison would be allowed outside of Yellowstone National Park. That decision currently excludes the area west of South Fork Madison River as an area acceptable for native bison occupancy. Therefore, the South Fork and Watkins Creek Allotment are currently closed to bison regardless of whether there is domestic livestock or not. That being said, there are numerous changes being proposed for the management of brucellosis and bison. For Example, during the 2011 Montana congressional session there was proposed legislation to make Montana Fish, Wildlife and Parks the agency in charge of managing bison and not Department of Livestock (although the legislation was not approved at this time). Another example is the Animal and Plant Health Inspection Service published recent changes to the management of brucellosis outbreaks in the Federal Register which would allow for more flexibility in how the brucellosis disease is managed.

Remove livestock allotments from the west side of Hebgen Lake. Some people said that livestock grazing is not in the best interest of the government, or that there are other places better suited for allotments. Alternative 1 addresses these concerns.

2.6 Monitoring and Mitigation Measures

The table below describes the type of monitoring and mitigation measures to be included in Alternatives 3 and 4.

Table 2.6.A - Monitoring Plan and Mitigation Measures for Alternatives 3 and 4.

Resource	**Action**	**Desired Sampling Frequency**	**Personnel responsible**
Range Administration	Stocking levels, brands, classes of animals*	Random	Range management specialist
Range Administration	Location and timing of rotation in pastures*	Random	Range management specialist
Range Facilities	Maintenance of improvements, drop fences in the fall*	Annually	Permit holder
Range Vegetation and Soils	Range readiness (plant development and soil condition), delay turn-on date until plants are ready*	Cold wet springs	Range management specialist
Range Vegetation	Range upland and riparian vegetation utilization	Every three years or more often if necessary	Range management specialist
Archeological Sites	Prior to installing new water trough and fence line, complete a resource survey	Once, prior to disturbance	Archeologist
Range Vegetation	Mapping and control of noxious weeds*	Every year	Range management specialist
Water Quality, Fisheries	Steam bank alteration, stream channel stability, PFC, riparian vegetation condition	Every five years, or more often if necessary	Fisheries biologist, Range Management specialist
Riparian Dependant Species	Western toad breeding site at Spring Cover, fence off lake side if necessary	Annually	Fisheries biologist
Range Vegetation	Steam bank alteration, on Denny Creek Ditch	Every year	Range management specialist
Noxious Weed	Power-wash all off-road vehicles before leaving the road and entering the allotment. Avoid driving equipment through patches of weeds.	Every time	Permit holder and Forest Service personnel

* Also applies to Alternative 2.

If inspection indicates that riparian or upland grazing standards and guidelines would be exceeded prior to the end of the grazing season, the permit holder would be contacted immediately to work out and implement a solution. This could include such actions as moving livestock to a different pasture, reducing livestock numbers, removing livestock for the remainder of the year, or temporarily fencing off particular areas.

2.7 Comparison of Alternatives Considered in Detail

The table below provides a summary of key similarities and differences between the alternatives.

Table 2.7.A - Comparison of Alternatives

Component	**Alternative 1** **No Grazing**	**Alternative 2** **Current Management**	**Alternative 3** **Proposed Action**	**Alternative 4** **Modified Proposed Action**
Authorized Livestock, # Animal Unit Months (AUM)	0	South Fork – 15 cow/calf pair, or 46 head month, 61 AUM Watkins – 55 cow/calf, or 168 head month, 222 AUM	South Fork – 15 cow/calf pair, or 46 head month, 61 AUM Watkins - 55 cow/calf, or 168 head month, 222 AUM	South Fork – 15 cow/calf pair, or 16 horses, or 13 steers (61 AUM) Watkins - 55 cow/calf, or 60 horses, or 48 steers (222 AUM)
Approximate Grazing season	0	South Fork – July 1 to Sept. 30 Watkins - July 1 to Sept. 30	South Fork – July 1 to Sept. 30 Watkins - July 1 to Sept. 30	South Fork – July 1 to Sept. 30 Watkins - July 1 to Sept. 30, or current guideline for brucellosis
Pastures and suitable grazing acres	n/a	South Fork –141 ac North – 40 acres Middle – 69 acres South – 32 acres Watkins –493 ac Upper Watkins – 246 acres Watkins – 247 acres	South Fork –141 ac North – 40 acres Middle – 69 acres South – 28 acres Watkins –508 ac Upper Watkins – 262 acres Watkins – 247 acres -	South Fork –141 ac North – 40 acres Middle – 69 acres South – 28 acres Watkins –508 ac Upper Watkins – 262 acres Watkins – 247 acres
Existing structures to maintain	0	South Fork – FS fence (5359 ft) PVT fence (10795 ft) Watkins –FS fence (5696 ft) PVT fence (9213 ft) FS corral	South Fork –FS fence (5378 ft) PVT fence (10795 ft) Watkins –FS fence (5115 ft) PVT fence(9353 ft) FS corral	South Fork –FS fence (5378 ft) PVT fence (10795 ft) Watkins –FS fence (5115 ft) PVT fence (9353 ft) FS corral
New structures (not fences)	0	South Fork – none Watkins – none	South Fork – water gap in fence Watkins – harden crossing, cattle guard, water tank	South Fork – water gap in fence Watkins – harden crossing, cattle guard, water tank
Upland utilization	No livestock	55%	55%	55%
Riparian use	No use by domestic livestock	35-50 %	35-50 % Denny Creek Ditch, Use Beaverhead Riparian Guideline - 30% of the area trampled within 100 ft green line (or use most current method), measure permanent plots every 5 years. Basin Cabin Spring Ck – monitor every 5 years to see trend data, if creek impacted then modify grazing	35-50 % Denny Creek Ditch, Use Beaverhead Riparian Guideline - < 30 % of the area trampled within 100 ft green line (or use most current method), measure permanent plots every 5 years. Basin Cabin Spring Ck – monitor every 5 years to see trend data, if impacted then modify grazing

Table 2.7.B - Summary of Current Condition for Issues Analyzed in Detail

ISSUE	South Fork Allotment	Watkins Creek Allotment
Stream Form and Function Proper Functioning Condition	*Basin Cabin Spring Ck* – "proper functioning" *Denny Creek Ditch* –artificial ditch "non-functioning" , natural stream "proper functioning"	*Watkins Ck* – "proper functioning" *Wally McClure Ck* – "proper functioning" (
Stream Channel Stability (SCS) Reference/Existing/Departure	*Basin Cabin Spring Ck* – 64/64/0 *Denny Creek Ditch* - ditch 76/58/18 natural stream 62/58/4	*Watkins Ck* –73/69/4 *Wally McClure Ck* -51/48/3
Meet Forest Plan monitoring requirement - Less than 20 point increase in SCS	Yes, meets requirement	Yes, meets requirement
- Less than 25 % loss in effective stream bank cover	Yes, project would not change stream bank cover	Yes, project would not change stream bank cover
Riparian Species		
- Yellowstone cutthroat	- No Effect	- No Effect
- westslope cutthroat	- No Effect	- No Effect
- northern leopard frog	- No Effect	- No Effect
- arctic grayling	- No Effect	- No Effect
- western toad	- May Impact Individuals or Habitat, but will not likely contribute to a Trend Towards Federal Listing or Loss of Viability to the Population or Species."	- May Impact Individuals or Habitat, but will not likely contribute to a Trend Towards Federal Listing or Loss of Viability to the Population or Species."
western pearlshell mussel	- No Effect	- No Effect
Upland and Riparian Vegetation Departure from reference condition	*North Pasture* -28 ac "slight to moderate" departure because more sagebrush than reference; 12 ac "none to slight" departure *Middle Pasture* – 69 ac "slight to moderate" departure because more bare ground, sagebrush, and non-native plants than reference *South Pasture* – 11 ac "moderate" departure because noxious weeds; 21 ac "slight to moderate" departure because noxious weeds, and non-native grasses and forbs	*Watkins Pasture* – 134 ac "slight to moderate" departure because noxious weed, and non-native grasses and forbs; 112 ac "none to slight" departure *Upper Watkins Pasture* – 359 ac "none to slight" departure, 134 ac "slight to moderate"

ISSUE	South Fork Allotment	Watkins Creek Allotment
Noxious and Invasive Weeds	*North Pasture* – hoary alyssum 0.1 ac *Middle Pasture* - Canada thistle 0.1 ac *South Pasture* – yellow toadflax 0.3 ac, Canada thistle 0.1 ac	*Watkins Pasture* - houndstongue 0.5ac, spotted knapweed 5.0 ac, Canada thistle 1.0 ac, musk thistle 1.0 ac *Upper Watkins Pasture* – houndstongue 0.2 ac, common tansy 0.1 ac, spotted knapweed 0.1 ac, Canada thistle 0.2 ac, common tansy 0.1 ac
Soils - Detrimental Soil Disturbance	Obviously less than 15 % disturbance based on field review, one two track, no area with measureable impact due to cattle.	2.5 % from past timber sales and existing roads
Wildlife – Threatened and Endanger Species Canada lynx grizzly bear	 -Not Likely Adversely Affect -Not Likely Adversely Affect	 -Not Likely Adversely Affect -Not Likely Adversely Affect
Wildlife – Sensitive Terrestrial Species - bald eagle, trumpeter swan, and gray wolf - other sensitive species	 -"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - habitat not present	 -"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - habitat not present
Wildlife – Management Indicator Species - pine martin - Rocky Mt. elk - northern goshawk	 - no effects - minor effects - no effects	 - no effects - minor effects - no effects
Wildlife – Bison Habitat	- no effects	- no effects

Table 2.7.C - Comparison of Effects to Issues Analyzed in Detail by Alternative.

ISSUE	Alternative 1 No Grazing	Alternative 2 Current Management	Alternative 3 Proposed Action	Alternative 4 Modified Proposed Action
Stream Form and Function	Two sensitive areas on Watkins and Wally McClure Creek, would recover. Basin Cabin Spring Ck, presently in "proper functioning condition," would remain the same. Denny Creek Ditch has a short section (50 meter) that would recover, the rest would remain the same	Two sensitive areas on Watkins and Wally McClure Creek, presently in "proper functioning condition," would remain the same as current condition. None of the other streams would change	Two sensitive areas on Watkins and Wally McClure Creek, would recover. None of the other streams would change. Mitigation measure limit amount of trampling along "green line"	Two sensitive areas on Watkins and Wally McClure Creek, would recover. None of the other streams would change. Mitigation measure limit amount of trampling along "green line"
Riparian Species - westslope cutthroat	- No Effect	- No Effect	- No Effect	- No Effect
- northern leopard frog	- No Effect	- No Effect	- No Effect	- No Effect
- arctic grayling	- No Effect	- No Effect	- No Effect	- No Effect
- western toad	- No Effect	- May Impact Individuals or Habitat, but will not likely contribute to a Trend Towards Federal Listing or Loss of Viability to the Population or Species."	- May Impact Individuals or Habitat, but will not likely contribute to a Trend Towards Federal Listing or Loss of Viability to the Population or Species."	- May Impact Individuals or Habitat, but will not likely contribute to a Trend Towards Federal Listing or Loss of Viability to the Population or Species."
-western pearlshell mussel	- No Effect	- No Effect	- No Effect	- No Effect
Upland and Riparian Vegetation	No change from current condition	No change from current condition	No change from current condition, long term monitoring riparian veg on Basin Cabin Spring Creek and Denny Creek Ditch	No change from current condition, long term monitoring riparian veg on Basin Cabin Spring Creek and Denny Creek Ditch
Invasive Weeds	Weeds will persist, spread by recreational users, FS will treat weeds	Weeds will persist, spread by recreational users and livestock, FS will treat weeds.	Weeds will persist, spread by recreational users and livestock, FS will treat weeds.	Weeds will persist, spread by recreational users and livestock, FS will treat weeds
Soil Compaction and Detrimental Disturbances	Compliance with Northern Region soil standard Disturbed areas would recover	Compliance with Northern Region soil standard	Compliance with Northern Region soil standard	Compliance with Northern Region soil standard

ISSUE	Alternative 1 No Grazing	Alternative 2 Current Management	Alternative 3 Proposed Action	Alternative 4 Modified Proposed Action
Wildlife – Threatened and Endanger Species Canada lynx grizzly bear	 -Not Likely Adversely Affect -Not Likely Adversely Affect	 -Not Likely Adversely Affect -Not Likely Adversely Affect	 -Not Likely Adversely Affect -Not Likely Adversely Affect	 -Not Likely Adversely Affect -Not Likely Adversely Affect
Wildlife – Sensitive Terrestrial Species - bald eagle, trumpeter swan, and gray wolf - other sensitive species	-"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - no effect, habitat not present	-"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - no effect, habitat not present	-"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - no effect, habitat not present	-"may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species" - no effect, habitat not present
Wildlife – Livestock Grazing Effects on Bison habitat	- no effects	- no effects	- no effects	- no effects
Wildlife – Management Indicator Species - pine martin - Rocky Mt. elk - northern goshawk	 - no effects - minor effects - no effects	 - no effects - minor effects - no effects	 - no effects - minor effects - no effects	 - no effects - minor effects - no effects
Economics – PNV **Forest Service** **Permit Holder**	-$ 10,859 ($1,085/yr) $0	-$ 22,017 ($2,201/yr) -$ 21,269 ($2,126/yr)	-$ 24,435 ($2,443/yr) -$ 29,731 ($2,973/yr)	-$ 24,435 ($2,443/yr) -$ 29,731 ($2,973/yr)